

### Claims

What is claimed is:

- 5           1.     A bi-directional shift controller device operable to receive an input from either of  
two shift registers and provide an input to a shift register input, comprising:  
a plurality of devices serially connected between a first control line and a  
known voltage, wherein a first terminal of a first one of said devices is connected  
to said first control line and a second terminal of said first device is connected to a  
10       first terminal of a second one of said devices and a second terminal of a third one  
of said devices is connected to said known voltage;;  
a fourth device connected between a second control line and said shift  
register input, said first device second terminal further electrically connected to  
said shift register input;  
15               means to apply a first voltage concurrently to a third terminal of each of  
said first and one of said second and third devices;  
              means to apply a second voltage concurrently to a third terminal of each of  
said fourth and the other one of said second and third devices; and  
              means to apply different voltages to said first and second control lines,  
20       wherein said different voltages determines which of said adjacent shift register  
inputs is processed.
2.     The device as recited in claim 1, further comprising:  
              means to invert said first and second voltages.

3. The device as recited in claim 1, wherein said combinatorial logic is operable as a NOR gate.
4. The device as recited in claim 3, wherein said first and fourth devices are n-type devices and said second and third devices are p-type devices.
- 5 5. The device as recited in claim 3, wherein said known voltage is a high voltage.
6. The device as recited in claim 3, wherein said first control line voltage is a high voltage and second control line voltage is a low voltage.
7. The device as recited in claim 3, wherein said first control line voltage is a low voltage and second control line voltage is a high voltage.
- 10 8. The device as recited in claim 2, wherein said combinatorial logic is operable as a NAND gate.
9. The device as recited in claim 8, wherein said first and fourth devices are p-type transistors and said second and third devices are n-type transistors.
10. The device as recited in claim 8, wherein said known voltage is a low voltage.
- 15 11. The device as recited in claim 8, wherein said first control line voltage is a high voltage and second control line voltage is a low voltage.
12. The device as recited in claim 8, wherein said first control line voltage is a low voltage and second control line voltage is a high voltage.
13. The device as recited in claim 1, wherein said devices are selected from the group consisting of: FET, FGT,  
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14. The device as recited in claim 1, wherein said shift registers are physically adjacent to said device.
15. The device as recited in claim 1, wherein said shift registers are logically adjacent to said device.

16. A bi-directional shift register circuit comprising:

a plurality of shift registers, each having an input and an output terminal, and  
a bi-directional shift controller circuit associated with each of said shift registers  
comprising:

5 a first input connected to a first shift register output terminal and a second  
input connected to a second shift register output terminal;

means to apply a first and a second control voltage, wherein said first and  
second control voltage are different; and

10 a combinatorial circuit responsive to said first and second control voltages  
to apply an indication of an input received from either said first shift register or  
said second shift register to said corresponding shift register input terminal.

17. The circuit as recited in claim 16 wherein said combinatorial circuit further  
comprises:

15 a plurality of devices serially connected between said first control voltage  
and a known voltage, wherein a first terminal of a first one of said devices is  
connected to said first control line and a second terminal of said first device is  
connected to a first terminal of a second one of said devices and a second terminal  
of a third one of said devices is connected to said known voltage;

20 a fourth device connected between said second control voltage and said  
shift register input, said first device second terminal further electrically connected  
to said corresponding shift register input terminal;

means to apply a voltage on said first input concurrently to a third terminal  
of each of said first and one of said second and third devices; and

25 means to apply a voltage on said second concurrently to a third terminal of

each of said fourth and the other one of said second and third devices.

18. The device as recited in claim 17, further comprising:

means to invert voltages on said first and second inputs.

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19. The device as recited in claim 17 wherein said combinatorial circuit is selected from the group consisting of: NOR, NAND.